

gether with the results of an investigation planned especially to bring out all the facts in the case. The insinuation is made that results founded upon stomach examination are essentially unreliable. The fact is that this method was adopted and is maintained principally because of the glaring insufficiency and incorrectness of field observations. It must be remembered that, given a sufficient number of stomach contents, evenly distributed chronologically and geographically, we have evidence, more exact than is obtainable in any other way, of the usual subsistence and hence of the economic significance of a species. The fact that a stomach examination reveals the nature only of a single meal, is of no importance, when a dozen or more stomachs are often collected in the same locality at about the same time.

Gamekeepers should not be too quick to disregard the findings of economic ornithologists as to the value of hawks, owls and other birds, especially as some of their worst vermin, as rats, snakes, etc., are customary food of these birds.

Mr. Huntington points out the availability of the grounds of many established ducking clubs for the purpose of propagating game, and suggests that the clubs take up the work both for their own welfare and the preservation of game birds as a group. Suggestions as to the formation of duck propagating clubs or syndicates are given, together with estimates of expenses.

A chapter entitled "The restoration of wild fowl" discusses the use of decoys for luring wild birds to ponds, and the most judicious shooting of the wild birds. It would bear more becomingly the title "The destruction of wild fowl." Description of the methods of shooting followed on preserves, so as not to drive away the ducks, nor impair the breeding nucleus, forms the subject of another chapter.

The diseases also of wild ducks are discussed and a letter on the subject from the chief of the Bureau of Animal Industry shows that the great Bear River, Utah, epidemic was coccidiosis, a result agreeing with those reached in all previous scientific investigations of epidemics among ducks in the United States.

A special chapter on propagating wild geese gives the experience of Mr. Whealon of Chincoteague Island, Va., and Mr. Warren R. Leach of Iowa (?). The shorebirds are briefly mentioned as profiting by the protective measures employed on duck preserves.

Mr. Huntington's share of the book closes with arguments for legislation favorable to game farming, and with the text of a proposed law for breeders.

An appendix contains accounts by Prof. W. W. Cooke of the distribution and migration of the principal game ducks.—W. L. M.

Papers on Tick-eating Birds.—Dr. A. Fredholm publishes in Trinidad,¹ the observations² of Newstead on the natural enemies of ticks in

¹ Proc. Agr. Soc. Trinidad, X. Part 7, July, 1910, pp. 258-263.

² Bull. Jamaica Dept. Agr., Vol. I, No. 3, April, 1910, pp. 161-165.

Jamaica, which have previously been reviewed.¹ Mr. D. W. May in an article² on Cattle in the West Indies, mentions a blackbird of Porto Rico that follows the cattle about and picks the ticks off of them. He says: "I have seen them grasping the tail with both feet and feeding upon the ticks infesting the hind quarters of the animal. They will also stand upon the ground beneath the animal and jump up picking ticks, getting one at each hop. To this bird is largely due the fact that in our fields ticks are not so plentiful as in the Southern States." This bird undoubtedly is *Quiscalus brachypterus*, the species mentioned by Bowdish³ as feeding on vermin on cattle near Mayaguez.—W. L. M.

Grinnell on 'The Linnet of the Hawaiian Islands.'⁴—The paper is an important discussion of color as found in the *Carpodacus mexicanus* group of birds, and the principal facts on which it is based are summarized in the following quotation: "A series of male Linnets collected in the Hawaiian Islands in 1910 are all of the yellow or orange type of coloration. The Linnet of the Hawaiian Islands is known to be of exotic origin. It is believed to have been introduced less than forty years ago, the imported individuals having been obtained in the vicinity of San Francisco, California, where the common *red* type is known to have prevailed ever since birds have been observed in the region, a period of sixty years at least."

For an explanation of the color variations, the author inclines to the latest biological theories as shown by citation of another paragraph, viz.: "A deficiency in capacity, of the germ, for the formation of the appropriate enzyme may have been intensified through close breeding until the condition was reached where the amount of enzyme produced in the feather anlage is insufficient to carry on oxidation of tyrosin beyond the yellow, or at farthest, the orange stage." He admits that "the explanation offered is tentative to the last degree," but what is more surprising is that he virtually excludes food as a possible factor in producing these results.—J. D., Jr.

Grinnell on 'The Modesto Song Sparrow.'⁵—If this new form, *Melospiza melodia mailliardi*, takes rank with its predecessors it will bring the number of recognized races up to twenty-one. The form *heermanni* once occupied alone the central valleys of California, where now there are several aspirants of which this is the newest.—J. D., Jr.

¹ Auk, XXVIII, Jan., 1911, p. 136.

² Porto Rico Hort. News, III, No. 4, April, 1910, p. 59.

³ Auk, XX, Jan., 1903, p. 13.

⁴ The Linnet of the Hawaiian Islands: A Problem in Speciation. By Joseph Grinnell. Univ. of California Pub. in Zoöl., Vol. VII, No. 4, pp. 179-195.

⁵ The Modesto Song Sparrow. By Joseph Grinnell. Univ. of California Pub. in Zoöl., Vol. VII, No. 5, pp. 197-199.